

Psophia it is B,XY, as it is in *Cariama* (in *Chunga* B is also absent). In *Balearica regulorum* the formula is XY; in *Grus antigone* it is AB,XY, the femoro-caudal being reduced to almost a thread; in *Anthropoides virgo* the formula is AB,XY, as it is in *Ibis* and *Platalea*, as well as in *Eurypyga*. Myology therefore does not militate against the Gruine affinities of *Aramus*.

Further, as in *Grus*, the tensor fascia covers the *biceps cruris*; the *biceps humeri* muscle sends a special belly into the patagium; the *expansor secundariorum* is Ciconine; the obturator internus has a triangular origin*.

Alimentary canal.—The *tongue* is $2\frac{1}{2}$ inches long, very slender, quite smooth, nearly cylindrical, and tapering to a fine point in front. It has a slight papillary fringing at its posterior edge. The *oesophagus* is very capacious, although no crop is developed. The *proventriculus* is zonary; its glands are cylindrical and short. Between it and the gizzard is a capacious dilatation of the termination of the gullet, lined, apparently, with squamous epithelium, the volume of which is greater than that of the interior of the gizzard itself. The gizzard is not large, and its muscular walls are not thick. The *liver* has the left lobe a little larger than the right, a condition far from common among birds; the gall-bladder is present. The average-sized, or slightly narrow, *intestines* are 40 inches in length. The *cæca* are somewhat dilated toward their blind ends; they are 2 and $2\frac{1}{4}$ inches long. They are peculiar in being situated laterally, and close together, instead of opposite one another, a condition approximated to in most of the non-columbine Schizorhinal birds, and in them only; the small intestine therefore enters the colon by a lateral, slit-like opening. In the Cranes the *cæca* are generally between 5 and 6 inches long; and they being so much larger, the comparative size is much the same. In *Ibis*, *Platalea*, and *Eurypyga* they are very much shorter; in *Cariama* they measure 10 inches, whilst in *Psophia* their length is much the same as in *Aramus*.

2. On the past and present Geographical Distribution of the Large Mammals of South Africa. By T. E. BUCKLEY, B.A., F.Z.S.

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After I had made arrangements for an expedition to South Africa, principally for the purpose of sport, in 1873, the University of Cambridge offered me a grant from the "Wort's Fund," on the condition that I should send home a collection of specimens equal in value to the amount of the grant, and should also make a report to the Vice-Chancellor, detailing any observations that I thought of sufficient importance to be preserved.

As the larger Mammals are yearly receding further into the interior, and as their total extinction is only a question of time, I thought I

* For further reference to these points, *vide* P. Z. S. 1876, p. 195.

could not do better than set down the limits of each of the most important species at the time of my visit, as accurately as it was in my power to ascertain them, adding thereto such particulars as could be obtained from the accounts of former travellers, as to the range of the species at the time of their visit.

Considering the number of people who year by year visit South Africa for the purpose of shooting, it is wonderful how very little, comparatively speaking, has been written on its zoology. Many books on the sport to be met with there have appeared at different times; and from these a great deal may be learnt; but this information requires a vast amount of collating and sifting. On the larger mammals, of which we are now alone speaking, Harris's 'Wild Animals of Southern Africa' is perhaps the best book, giving, as it does, a plate and description of all those met with by the author. Dr. A. Smith's work on the Zoology of South Africa gives us descriptions and plates of only ten of the larger animals: the plates are decidedly inferior to those of Harris; and the colouring in one or two instances is wrong. These two are the latest works on South-African mammals; and when we consider the enormous number of animals killed year by year there, and the consequent impending extermination of these creatures, some of which even now are extremely scarce, it is to be hoped that some one will before long take in hand to set forth their complete life-history.

I am glad to say that now there are game-laws both in Cape colony and Natal, which, late though it is, will at least preserve a remnant of some of the larger animals, such as the Hartebeest and Eland. Of the smaller Antelopes there are still plenty; the existence of any of the larger species in the colonies will be noticed under the proper heading, when I could get reliable information concerning them.

The Tsetse fly has been of great service in preserving animals, comparatively few hunters caring to shoot on foot in such a hot climate. This is the reason why the Zulu country has so long held large game, its southern boundary being only some seventy miles from D'Urban; but now, since it has become the fashion for the hunters to arm natives to shoot for them, even in this country, favoured as it is by abundance of grass, water, and shelter, extermination is going on rapidly—so much so that a friend writes me saying that after next winter he does not think that it will be worth his while going to hunt in his old haunts; and yet this very country only some ten or fifteen years ago swarmed with game to an incredible extent. The result of the extermination of the game is that the Tsetse disappears, thus giving a greater extent of country for the rearing of domestic cattle.

The Tsetse appears to be found mostly where there are large herds of buffaloes, and is said, in some cases, even to migrate with these animals; at other times it appears a very local insect,—in one case a well-beaten road up country passing very close to its haunts; and, I believe, at night cattle may be driven through these localities with perfect safety, care being taken to be outside before the break of day.

My route from Natal was as follows:—I left Pietermaritzburg on the 15th of May, crossed the Drakenberg range on the 6th of June; on the 8th the bullocks were lost, which delayed me about a week; but I reached Pretoria on the 28th of June. I left again on the night of the 30th, and struck the Crocodile or Limpopo river on the 10th of July, and travelled slowly along the river for the sake of some shooting. Bamangwato was not reached until about the 5th or 6th of August. I was detained here about a week, but at last left on the 12th. Unfortunately I took a wrong road on the way to the Tati, and had to retrace my tracks for some considerable way, which delayed my arrival there until the 28th of August. I left the Tati on the 1st of September, and reached the Samouqui river, my furthest point, about the 12th of the month. The route on my return journey was precisely the same, but took less time, owing to the much lighter load to be carried down. My waggon arrived in Pietermaritzburg on the 3rd of January 1874.

My stay in the country having been very short, from the end of April till the middle of the following January, and not much more than the half of that time having been spent in a game country, my notes cannot be very extensive. I shot twenty-two different species of animals, and saw others,—a fair number, considering I had to do all my shooting on foot, and with very little aid from the natives.

I have been aided in my notes by friends whose experience was much greater than mine, and also by such books as I could get; but, being so far away from a library, there were, of course, many to which I could not refer: this must be taken as an excuse for many errors into which I may have fallen. I have purposely avoided giving descriptions of any animals, as they are mostly described in Harris's book from actual specimens.

In the Table exhibited (see pp. 291, 292) I have endeavoured to give the geographical distribution of these larger animals in Southern Africa, as far as I could gather it, both at present and formerly; but I could get no information concerning Natal and the countries immediately south of it, though it is probable that the coast-line, where it represents the Zulu country, would be occupied by the same animals.

Apparently most of the South-African Antelopes have their representatives to the north and west; thus the Waterbuck is represented by the Sing-Sing on the west, and the Mchédet of Baker on the north. Many other instances might be mentioned. Some species, again, are common to the whole of Africa, as the Giraffe and one species of Black Rhinoceros; others, again, are very limited in range, as the Blesbock.

The horns of all species of Antelope, whatever their shape may be hereafter, are the same when young, and consist of two small stumps three or four inches long, standing almost straight up. While the horns are growing, especially during summer, their bases are quite soft, and for a considerable way up can be pulled off in flakes.

1. ELEPHAS AFRICANUS. (The Elephant.)

Excepting the few still preserved by Government in the Knysna

Forest, the Elephant may be considered extinct in the Cape colony and Natal. Seven and twenty years ago it was found in the bush around the town of D'Urban in the Natal colony, but now is almost exterminated even in the Zulu and Amaswazi countries. In the great reed-beds that exist in the neighbourhood of Santa-Lucia Bay in the former country, a few still remain, owing to the almost impossibility of getting at them; and in the Amaswazi country a few, I am told, are occasionally found under the Bombo Mountains. North of Delagoa Bay they get more numerous, especially so, I am told, in Umsila's country. In the Matabili land the Elephant is to a certain extent preserved, no one being allowed to hunt these animals without the permission of the king. North of the Zougá they are still fairly numerous; but with the immense number of hunters and traders, the destruction must be great indeed, and bids fair to exterminate the race in South Africa altogether, especially when we consider the very slow rate at which these creatures increase, and that cows and bulls are shot indiscriminately.

North of the Zambesi the Elephant is found through Central Africa into Abyssinnia, and along parts of the west coast. In some places they occur in vast herds, as seen by Livingstone (Zambesi Tributaries, p. 134), cows and bulls together. The number of trees destroyed by these animals is enormous; along the rivers Makloetze and Shashai, in the Bamangwuto district, the thick mimosa-groves which border their banks have been altogether destroyed by the ravages of these creatures.

The tusks of the cow Elephant are much thinner than those of the bull; but the hollow inside does not extend so far down. The largest tusk I heard of was one brought from Lake Ngami in 1872; this weighed 170 lb.; but its fellow was rotten and worthless. I have seen a pair weighing 90 lb. each; but such a perfect pair are, I believe, not common.

When Elephants are disturbed by shooting now, they often go great distances, passing through a large extent of thirst-land to a distant water; so fearful are they of fire-arms.

2. RHINOCEROS KEITLOA. (The Keitloa Rhinoceros.)

3. RHINOCEROS SIMUS. (The White Rhinoceros.)

Of African Rhinoceroses there are at least three distinct species, the fourth, *R. oswellii*, being, I fancy, rather a doubtful one. The two "black" species are *R. bicornis* and *R. keitloa*; they may at once be distinguished from the White Rhinoceros by their overhanging upper lip, which enables them to grasp the bushes on which they, I believe, exclusively feed. The only black species I met with was *R. keitloa*, observed on two occasions—once singly, another time an old female and her calf about half-grown, which latter was secured. Owing to incessant persecution these animals are now getting scarce, eight Rhinoceroses only having been seen by our party. At one time they must have been extremely common, judging from the number of skulls seen lying about. Harris, in his description of *R.*

simus, mentions having seen eighty of these animals in a day's march; and on one occasion in the space of half a mile he saw twenty-two and had to kill four in self-defence. A friend of mine whom I met on his way down from the Zambesi, told me he had only seen five, all *R. simus*, and all of which he secured.

At one time it was not at all uncommon to see *R. simus* with the anterior horn close on 3 feet and upwards in length; now, however, such animals are rare, most likely from the animal being shot down before it arrived at its full size. The dung of the black and white species differ materially; for whereas that of the former is light-coloured, more resembling that of an Elephant, that of the latter is very dark and much softer: thus a hunter, should he not be experienced enough in "spooring" to know which species he was after, would immediately do so on seeing the dung. Each species of Rhinoceros drinks every night, as may be seen by going in the morning to a waterhole, where their fresh spoor may be found, and the water is generally churned up into a filthy mass of mud. After leaving the water they go a long distance in Indian file should there be two or three together, when they spread out and begin to feed. Having had sight, by studying the wind and quietly (for a Rhinoceros is very quick at hearing) placing one's self near the line in which they are advancing, one may get an easy shot at any distance.

Nearly every Rhinoceros is accompanied by a few individuals of *Buphaga africana*, which rid it of its parasites and give it timely warning of danger. When the animal runs, these birds accompany it, hovering over it like flies above a horse's head, uttering a note something like *chirri-chirri-chit-chirri* all the time. The White Rhinoceros may often be found standing under a tree in the open plains; and at such places the dung collects into enormous masses, showing that the beast comes to the same tree day after day; when the mass gets very high the animal levels it with its horn. The Boreli (*R. bicornis*) always lives in the bush, and is one of the few animals that will charge and hunt a man unprovoked; this species often has a sore place behind the shoulder, which is supposed by the natives to be one of the causes of its savageness. *R. keitloa* is generally known to the hunters by the name of the Blue Rhinoceros.

4. EQUUS QUAGGA. (The Quagga.)

The animal commonly so called, is Burchell's Zebra; the true Quagga I never saw, though Harris mentions it as occurring in great herds, but only to the south of the Vaal river. Whether, since his time, it has become extinct or not is a question; but the few animals of this genus that were seen on the open plains were all clearly Burchell's Zebra. Some few years ago the three species of this genus were in little repute for their skins as compared with the Wildebeest and Blessbok; but of late years it has been discovered that they are of great use for, I believe, connecting-bands for machinery; at any rate their value increased so much that they have been shot down, until you may go for a week through the "High Veldt" and not see one, although there will be thousands of other animals.

5. *EQUUS MONTANUS*. (The Zebra.)

This species is said still to occur in the Hottentot Mountains near Cape-town; but it was not observed by us, nor did we see a skin during the time we were in Africa; however, as we did not ascend any mountains, where alone they are said to be found, we had no opportunity of judging whether or not they were rare.

6. *EQUUS BURCHELLII*. (Burchell's Zebra.)

One of the commonest animals throughout South Africa, more especially in the wooded parts. A few years ago it was equally common on the plains even in the north of Natal, but now has either been shot out or driven back by the hunters. This is the Quagga *par excellence* of South-African sportsmen, by whom it is killed, both for its skin, which is now extremely valuable, and also for its meat, which is one of the most palatable morsels you can give to your native servants; but there is a sort of smell about it which, with its dark colour and yellow fat, make it any thing but tempting to most white men. These animals are generally found, at least in the bush, in small parties of from eight to ten, frequently in company with Blue Wildebeests. The largest troop I ever saw contained probably about forty individuals. They are generally in good condition. This species, I believe, when possible, drinks every day; I have seen them at the water at midday, and also coming down again to it in the evening.

Their geographical range is wide: Speke and Grant found them north of Uganda; and at the present time they are common animals in the Zulu country. Their note is a sort of bark, like the Dutch pronunciation of the word Quagga, whence, most probably, came the name. They utter this constantly after being disturbed by a shot, especially if one is wounded and lags behind.

Out of five of these animals shot in one herd, there were individuals showing every variation of colour and marking, from the yellow and chocolate stripes, to the pure black and white, the stripes in some ceasing above the hock, and in others being continued distinctly down to the hoof. I saw a young foal in September, the only one I remember to have seen.

7. *GAZELLA EUCHIORE*. (The Springbuck.)

Still common in Cape colony, and more or less abundant through South Africa up to the Zambesi; it does not, however, occur in the Zulu and Amaswazi countries. Small herds of this species are generally seen mixed up with the Blesbocks and Wildebeests. When disturbed they go off in a series of bounds, opening the white line that extends halfway down the back to the rump, making the animals appear as if wholly white. When they come to a road, they usually spring right across it. Both male and female have horns, those of the latter, however, being much smaller and thinner. The calves are dropped about November, and are then cream-coloured. Gordon Cumming gives an interesting account of the periodical migrations of this Antelope in his work on South-African hunting.

8. *EPYCEROS MELAMPUS*. (The Pallah.)

This graceful Antelope occurs in all suitable localities, from the Zulu country far into Equatorial Africa. In the winter it is found in large herds; but in the summer these generally break up; and they may often be seen in family parties of three—an old ram and doe, and a young one. They seem to be fond of the vicinity of water, far from which I never observed them; when disturbed, they often bound off like a Springbuck. The male alone has horns, which are large for the size of the animal; the skin is much used by the natives for making karosses, at which the Bechuanas are very expert. The Pallah is essentially a wood-loving animal, never being found in the open country. Dr. Burchell seems to have been the first to make this species correctly known; in the second volume of his 'Travels,' p. 301, he gives a description of one that was obtained near Kuruman, where he first met with it.

9. *NANOTRAGUS OREOTRAGUS*. (The Klipspringer.)

The Klipspringer occurs in greater or less abundance throughout the whole of South Africa. I met with them in the Matabili country, haunting the rocky mounds that rise up so suddenly from the level ground, called "Kopjes" by the Dutch, generally in small parties of three. Their hair, which is long and bristly, is much used by the colonists for stuffing saddles. When alarmed at the foot of a Kopje, they at once ascend to the top; should, however, the hill be a small one, they soon take off across the country if pursued.

The Klipspringer does not invariably stay among rocks and high ground, though it always remains close by, as on three occasions I found them on the level ground at the foot of the stony rises that are so common in the African bush.

10. *NANOTRAGUS TRAGULUS*. (The Steinbock.)

This species was very common after passing Pretoria, the capital of the Transvaal, into the Matabili country; it is found in the Zulu and in Damara land, and seems spread through the whole country south of the Zambesi. They live either singly or in pairs, often in the driest situations, as they appear to require very little water.

One that I surprised suddenly in the sandy bed of a river lay close like a hare in its form until it considered me too near, when it ran off; they almost invariably stop, however, when they have gone a certain distance—a habit which often leads to their destruction.

The Steinbock feeds in the early morning, when it may often be seen creeping among the bushes; during the middle of the day it lies in a sort of form, and does not stir again until evening.

11. *CEPHALOPHUS GRIMMIA*. (The Duiker.)

The Duiker is met with through Natal and the Zulu country up to the Matabili country, but is not mentioned by either Andersson or Baines as occurring in Damara land. It is generally found in the bush-country solitary; when disturbed it rarely stands again, as a

Steinbock does, but goes off at once; when wounded it screams like a hare. Like the Steinbock the Duiker lives in the most arid country, seeming to be quite independent of water.

12. *COBUS ELLIPSIPRYMNUS*. (The Waterbuck.)

A common species, extending from the Zulu country through the east of Equatorial Africa into Abyssinia, as mentioned by Grant and Baker. It seems never to be found far from water, through which it does not hesitate to go when alarmed; it lives in herds of from three or four to as many as twenty, though the old males generally live a solitary life, at least not more than one being found with a herd of females and young. The younger males herd by themselves, as I have shot two out of a small lot of six or seven, their horns then not being more than four or five inches in length. The females are hornless. The Waterbuck is found abundantly through the Zulu and Amaswazi countries up to the Limpopo and Mariqua, which seem to be its boundary in a south-west direction; it is found on the Zambesi, and at least as far to the west as the Botletlie river, where Chapman mentions killing one; but here its place is mostly occupied by the Leché. The flesh of the Waterbuck is so coarse, poor, and tasteless that even the natives do not care for it. From the white ring round its rump the Dutch have given it the name of Kringhat.

13. *STREPSICEROS KUDU*. (The Koodoo.)

Once common in the Cape colony, the Koodoo, unless there be a very small remnant indeed, is not found now nearer than the Zulu country. Here it yet holds its ground in spite of the yearly persecution of the hunters, by whom it is killed on account of the value of its skin, which is fine, but at the same time tough and durable. It has a wide range, being found through Central Africa into Abyssinia, as recorded by Speke and Baker; but it is remarkable that the finest specimens come from the Zulu country, even animals killed near the Zambesi not having such fine horns; possibly this may be accounted for by the Zulu country possessing better pasturage. The males alone possess horns; the females and young go about in small herds of seven and eight, sometimes one old male accompanying them; this would probably be in the rutting-season; I have also seen a small herd of young males only. This species frequents the bush country exclusively, and seems to prefer that part where there are many stony rises; the tips of the horns of the old males glance in the sun almost like the points of bayonets. The Koodoo is supposed to be able to do with less water than many of the other antelopes; but I have seen them drinking in the middle of the day; they are difficult animals to spoor, as they feed in a scattered manner, sometimes returning on their own tracks a short distance, in a way different from other antelopes; young calves well grown were seen following their dams in September.

14. *OREAS CANNA*. (The Eland.)

Of all antelopes inhabiting Southern Africa the Eland is the one

most liable to extermination; easily ridden down, the best and fattest of all animals, the skin of value as well, it is year by year diminishing in numbers. Throughout my travels I only saw them on two occasions, and never obtained a specimen; I have at different times seen their fresh spoor (which resembles that of the buffalo, but is rather smaller and rounder) in the driest spots through which we passed; and it is said they require very little water. Harris speaks of these animals as occurring in vast droves in the open country south of the Vaal river; now the Eland is only to be found in the more remote wooded country. A few yet remain in certain parts of Natal, one locality being Bushman's River, where, luckily, they are now carefully preserved.

15. *TRAGELAPHUS ANGASI*. (The Inyala.)

This fine Bush-buck inhabits the bush bordering the sea-coast along the Zulu and Amaswazi countries, from the Inyalazi river (its southern boundary), as far north at least as Delagoa Bay, probably beyond this. It appears to be very local, never, as far as I could hear from the hunters, being found out of this limit. The Inyala lives in small herds, the old rams being generally solitary; but the younger ones accompany the females. They inhabit the very thickest bush.

16. *ALCELAPHUS CAAMA*. (The Hartebeest.)

Why the Hartebeest should have become so rare is a matter of conjecture; but from being one of the commonest animals throughout the Cape colony (according to Harris, up to the tropic of Capricorn), it is now one of the rarest of the antelopes. We observed it only on three or four occasions, once just before reaching the Crocodile River, and once or twice in the colony of Natal, where, being preserved, it is now becoming fairly common. At the time of Harris's visit to South Africa it seems to have been extremely abundant, mingling with the vast herds of Blesbocks and Wildebeestes. A few are met with about the Bamangwato hills; Col. Grant mentions having met with this species as well as *A. lichtensteini* in Equatorial Africa. A friend tells me, however, that he never met with it from Shoshong (the capital of the Bechuanas) to the Zambesi. It is not mentioned by Baines, Andersson, or Chapman as occurring in South-west Africa. In the south-east, again, a few still remain in the Zulu country, as well as in Natal; but I could not hear of it as occurring in the Amaswazi country, where its place is taken by the Sassabye. The Hartebeest prefers the open country or where the bush is, at best, very scanty: the three or four we saw near the Crocodile River were very shy, not allowing us to approach nearer than five or six hundred yards.

17. *ALCELAPHUS LUNATUS*. (The Sassabye.)

Although, in Harris's time, the Sassabye appears to have been common on the plains, at the present day it is essentially a bush-loving animal. According to Dr. O. Smith the Sassabye was rarely known to advance to the south of Latakoo; at present its southern

limit appears to be the Amaswazi country ; along the Limpopo it is very common, and continues so into the Matabili country up to the Zambesi. The old males do not seem to associate with the females ; nor do they appear so common, as out of nearly a dozen obtained by us only two were males, and one of these was immature. We observed very young calves in October. The Sassabye runs with a peculiar gait, reminding one of a rocking-horse ; its shoulders are very high, sloping away to the rump ; it does not seem to be a very shy animal.

18. *ALCELAPHUS ALBIFRONS*. (The Blesbock.)

Persecuted though it is, the Blesbock still continues to hold its ground, occurring through the Orange Free State and the Transvaal in countless numbers. In the winter they migrate south, a straggler coming even as low as Harrismith ; in the summer, again, they go north of the Vaal river. They do not seem ever to have occurred much to the west of 24° east long., or north of 25° south latitude ; on the east the Drakenberg range is the boundary. At one time they were found in the Cape colony, but were scarce there even in Gordon Cumming's time : the extensive plains in the Orange Free State and the Transvaal, however, were probably always the headquarters of this species. Why the Blesbock should still be so numerous, and the Bontebock, *D. pygarga*, almost extinct whereas, according to Harris, in 1836 it was almost as common as the Blesbock, is a problem not easily solved, inhabiting as they did the same localities, and feeding over the same ground. In habits, size, and appearance the Bontebock is almost identical with the Blesbock ; yet out of the vast herds of the former all that remain are a few individuals carefully preserved in the old colony near Cape l'Agulhaz. The Blesbock calves in November, the young at first being a sort of creamy brown colour ; the males and females live together in the same herds : these, when disturbed, invariably run up the wind, carrying their heads down.

19. *CATOBLEPAS GNU*. (The common Gnu.)

When Harris first entered the colony in 1836, the common Gnu was met with in Graaf Reinet ; now, however, their numbers are so much reduced by continued hunting, that it is not until we come to about fifty miles south of the Vaal river that any are seen. In winter a few wander to within a few miles of Harrismith ; but in summer as we were coming to Natal we only saw them after crossing the Vaal. On the 20th of June I saw quantities of Wildebeest and Blesbocks that were spreading themselves over the plains south of the Vaal ; and this is the time when they are most persecuted, as they are then very poor in condition, and with a good horse may easily be ridden down, especially in the early morning, when they are stiff with the frost and cold. Their skins are valuable, and form one of the chief exports of Natal ; and their flesh is converted by the Dutch boers into "beltong." Both sexes have horns ; but those of the female are much lighter and do not meet so closely over the forehead.

In summer the colour of their skin is a dark brown ; but in winter this turns to black. On taking out the brains when preserving a head there is generally found a quantity of a large white maggot, more like an exaggerated woodlouse than the common maggot ; the Blesbock too seems equally afflicted with these creatures. In December we observed lots of young calves ; they resembled their mothers in colour ; at this time the old bulls lead a solitary life, and seem to be much tamer, as I one day walked up to two on open ground to within one hundred and fifty yards, whereas they will scarcely allow one within five hundred on ordinary occasions. This species is liable to an epidemic which at times, I believe, makes great havoc amongst them ; I saw a young one in this condition : all the hair was off as if it had been burnt ; and it was unable to rise. It is very amusing to watch the antics of a herd when aroused or excited ; when approached to within five or six hundred yards they chase one another round and round for a short time, stand, stare, and paw the ground, then lashing their long white tails against their sides, set off as hard as they can go. They go in herds of from eight to fifty ; but I never saw them in such masses as the Blesbocks. They exhibit a good deal of curiosity ; three approached our waggon one day when outspanned close enough to allow of my shooting one of their number from the waggon-box, where I was sitting writing.

Although the Orange Free State and the Transvaal are the headquarters of this animal, yet they are found considerably to the north and west of this, as Chapman mentions meeting with this species on the Chobi river, which is in 18° S. lat., and 25° E. long. ; Baines and Andersson mention it as common in some parts of South-west Africa through which they travelled.

In summer the old males separate from the herds and live solitary. At this time they fix on one spot, making a sort of lair, to which they will return after feeding or being disturbed. This sometimes leads to their destruction ; for if two or three men go together, the old bull immediately gets up and goes away ; on this one of the party lies down in the spot lately occupied by the beast, the other two then retire. The Wildebeest thinking every thing is now safe goes quietly back to his particular spot, and is then shot at by the man who is lying down.

20. CATOBLEPAS GORGON. (The Brindled Gnu.)

The Blue Wildebeest, as it is generally called in S. Africa, was at one time found in abundance almost to the borders of Cape colony ; but it does not seem to have entered it, according to Dr. Smith's account of that animal ; it is yet found in the Zulu country ; and, according to Baines and Andersson, it is common in Damara-land. In Col. Grant's 'Observations' sent to the Geographical Society he says :— "This Gnu was found in large herds in Khutu, in the western borders of Uyaramo. It inhabits the park-like country adjoining the river Kingani, and was not seen after crossing the east coast range." It is a common species through S. Africa, very often being in company with Burchell's Zebra. About November the old bulls separate from the

herds and go singly; one that I shot about that time had its head plastered with mud, as if it had been using its horns on a bank, like we see the Stags in Scotland during the rutting-season. At one time the Blue Wildebeest inhabited the plains equally with the common Gnu; now, however, it is rarely seen except in the bush-country; like it, too, it generally makes one or two wheels round, when disturbed, before it takes to flight.

21. HIPPOTRAGUS EQUINUS. (The Roan Antelope.)

This Antelope (except the Eland, the largest of the family) was at one time, according to Dr. Smith, found within the Cape colony; but now its furthest range south seems to be the Amaswazi country, where it is still occasionally shot. It is probable that the Kalahari desert is its south-western boundary, as it is not mentioned by either Baines or Andersson in their works. Dr. Livingstone met with it in large herds on the Leeba; and Schweinfurth shot it in the Djoor district. The Roan Antelope is probably the rarest of the genus; nowhere does it appear very common; Harris in his 'Southern Africa' mentions killing several males of this species, but never seems to have procured a female, as he says in his description of this animal that it is hornless, a mistake copied also by Chapman; this is not the case, as the female has horns almost as long as the male. The only specimen I procured was shot standing in the middle of a sand river in company with a solitary Sassabye. Both this and the Sable Antelope will charge savagely when brought to bay; their cry of danger or anger is a kind of hissing snort, different from that of other antelopes. Their Bechuana name is "Qualata." From the accounts of natives this species seems to be most common in Umsila's country, which lies to the east of the Matabili.

22. HIPPOTRAGUS NIGER. (The Sable Antelope.)

This splendid Antelope was first discovered in 1836 by Capt. Harris on the Magaliesberg hills, where, it is said, one or two still linger; this would seem to be their southern limit, as the species is not found in the Zulu or Amaswazi countries; it is found however at Zoutpansberg, in the north-east of the Transvaal, and probably would be found to extend as far as the coast. To the west Livingstone met with it on the river Leeba, which is in long. 23° E., lat. 12° S.; but it is not mentioned by either Andersson or Baines as occurring in the south-west. To the north, the head of a young one was brought home by Speke, which Grant shot at Ukutu, which would be near the latitude of Zanzibar. The Matabili country is perhaps the locality where it is most numerous; we first met with traces of it near the Makloutze river, where we saw the skin of a large male in the possession of some natives. This species goes about in herds, sometimes very large. I have seen about fifty together; but there are not many old males among them; they are mostly females and young, the adult males generally leading a solitary life. The females of this species carry horns, but not so long as the old males: the colour of an adult female is dark chestnut, white underneath, with a mane

reaching to the shoulders; the young are much lighter in colour, whereas an old male is as black as jet. In running, the neck is arched, which throws the horns forward. The Sable Antelope is said to be able to defend itself from a Lion by striking sideways with its powerful horns. Mr. Baines has informed me that he has picked up horns covered with the hair and blood of a Lion. He himself saw a dog pierced through from chest to flank by an old male of this species that was wounded near his waggons.

23. ORYX CAPENSIS. (The Gemsbock.)

At one time common in Cape colony, Gordon Cumming having killed it not far from Colesberg, the Oryx or Gemsbock is now, I believe, restricted in that district to a locality not far from Cape L'Agulhaz, where a small remnant are now carefully preserved. It seems never at any time to have spread far to the east, at least not to the Zulu and Amaswazi country, according to the testimony of hunters there; nor does it seem to be common in, if even an inhabitant of, the Transvaal. To the west of that country, however, it is common, being found through Secheli's and Sicomo's territories. The borders of the Kalahari desert, by the Zonga up to Lake Ngami, and Damara Land seem to be the stronghold of this animal. Palatzi, a small water-hole in the Bamangwato district, about 27° E., was the only place where I myself observed this animal; but, being disturbed by some Giraffes, I was unable to get a shot. From what I learnt from hunters at Shoshong, however, it occurs east of this again, but sparingly. A friend told me that he never observed this species either going to or coming back from the Zambesi. I have heard that the Matabili have no name for this animal; but the Bechuana term is "Kokama." A good description of the habits of the *Oryx* is given by Andersson in his 'Lake Ngami.' It may be mentioned that both sexes have horns, these being longer in the female.

24. BUBALUS CAFFER. (The Cape-Buffalo.)

At one time abundant all through the Cape colony, the Buffalo now is found no nearer than the Zulu country; and even there it is getting very scarce. I heard that a small herd exists in Natal, near Bushman's River, where it is very strictly preserved. The largest herd we met with consisted of at least two hundred individuals of both sexes. The value of their hide has led to their gradual extermination in the more accessible parts, and even far in the Matabili country there were hunters killing them for this only. One man, we heard, had got upwards of a hundred in a month; surely no animal can long withstand such slaughter.

On approaching a herd the noise made by the animals rubbing their horns against the trees is very audible, as well as a rumbling sound. There is little danger in attacking a herd, as on the first shot there is a general stampede; but a wounded animal and a solitary old bull are very dangerous; often a solitary animal will charge down in the direction of the smoke of a shot, or after running a certain

distance will turn out of the way, and, retiring quietly in the bush alongside its own tracks, will charge on the unsuspecting hunter; and there are few who have not had several narrow escapes from these animals.

We saw very young calves of the Buffalo towards the end of September; and there was a full-grown fœtus in a cow which we killed about that time; when first born they are of a dark brown colour. Buffaloes require water at least once in the twenty-four hours, generally drinking at night, but sometimes in the afternoon; they feed in the morning and evening, but lie still during the heat of the day, in the shade.

Attempts have been made to domesticate the Cape-Buffalo, but they appear to have resulted in failure; not only is the animal too uncertain in temper, but, just as in the wild state it goes to rest during the heat of the day in the shade, so it is that from this reason the Buffalo is less hardy than the Ox, as it is unable to work during a great part of the day.

25. CAMELOPARDALIS GIRAFFA. (Giraffe.)

From all accounts it would appear that the Giraffe never occurred south of the Orange River. Sparrmann mentions it as occurring to the north and north-west of the colony in 1772, but seems not to have obtained a specimen. Paterson, in his 'Journey,' published in 1789, mentions that a friend of his killed one just north of the Orange River, which was devoured, however, by lions before he had a chance of inspecting it. Later on he was more fortunate; and at p. 125 he gives a description of one, and a very fair drawing also. To the east, I am informed that, although no longer inhabiting their country, the Zulus have a name for the Giraffe: their country lies between 27° and 29° south; so that 28° would be about their southern range.

At present I should say that the Giraffe does not occur much further south than 24°; it was about in this latitude, where the road leaves the Limpopo river on the way to Shoshong, that we first saw its spoor. Being rarely killed except from horseback, the Giraffe yet holds its own in the "fly"-country, where the Horse cannot enter, and from its enormous length of neck is able to take good care of itself from any one trying to stalk it on foot.

The flesh of a young cow is very good, and the marrow-bones excellent; its skin is used by the natives for making sandals, and by hunters and traders for making reins.

The Giraffe lives in small herds of from three to twelve; it inhabits the driest country, feeding on the young shoots of the mimosa trees, and occasionally on a small green fruit resembling an apple. When hunted they go off at a great pace, though it does not appear so, their long necks oscillating like a pendulum, and their tails screwed up over their rumps.

The following Table gives a summary of my conclusions:—

NAME.	PRESENT DISTRIBUTION*.	PAST DISTRIBUTION.
1. <i>Elephas africanus</i> .	A few still found in Cape colony, in the Knysna forest.	Common through the whole of S. Africa.
2. <i>Rhinoceros kaitlou</i> .	Found in the Zulu country, in places similar to those of the White Rhinoceros.	No information, as this species was not distinguished from <i>R. bicornis</i> until about 1836 by Sir A. Smith. He says, "We may infer that the Keitlou has not, at least for many years, been in the habit of generally extending his range higher than about 25° S. lat."
3. <i>R. sinus</i>	Still found in the Zulu country about lat. 28°, not further west than long. 31°, until we come to lat. 24°; there found everywhere more or less commonly in suitable localities.	First found by Burchell at Latakoo in 1812, lat. 27°, long. 24°, said by the natives at that time to have occurred frequently even south of this.
3 a. <i>R. bicornis</i>	Same as preceding species, but probably extends westwards a little sooner than it does.	In 1852 common on Table Mountain; in 1775 found by Sparrmann in lat. 32°; in 1812 mentioned by Dr. Burchell as almost exterminated in that latitude. Last one in Cape colony seen in 1849 in the Zuurberg and Aldo bush (<i>vide</i> Gordon Cumming's book, vol. i. p. 48). Zuurberg is in lat. 33°.
4. <i>E. quagga</i>	Unknown apparently, the Quagga so often mentioned by African hunters being <i>E. burchellii</i> .	At one time very common through the colony up to the Vaal river, which is said by Harris to be its northern limit. In his time it was very numerous in the extensive plains north of the Vaal river, in 1836.
5. <i>E. montanus</i>	Said still to occur in the mountainous districts of George (?), in the Cape colony. Mentioned by Livingstone as occurring on the Zambesi in about 1861, and by Baines in Damara Land in 1851; but its proper limits are very imperfectly known.	Probably the same limits as now.
6. <i>E. burchellii</i>	From 29° lat. in the Zulu country, in any place where there is any large game, but getting very scarce in the open places of the Transvaal and Orange Free State.	It is likely that this species only occurred to the north of the Orange River, taking the place of the real Quagga.
7. <i>Gazella euchore</i> ...	Still found through the colonies, but sparingly in comparison to former years. Abundant in grassy plains through the Orange Free State and the Transvaal.	Extremely common everywhere in suitable localities, but not further east than the Drakensberg Mountains.
8. <i>Apyceros melampus</i> .	Still inhabits the Zulu country, getting commoner the further north; very common on the Limpopo from about lat. 25° to the west. Mentioned by Baines in 1861 as being found first in long. 18°, lat. 22° 30'.	Found by Burchell at Kuruman in lat. 27° 6', long. 24° 59', who calls it one of the rarer Antelopes, probably did not occur much to the south in this part of Africa.
12. <i>Cobus ellipsiprymnus</i> .	Found in the Zulu country; common on the Mariqua and Limpopo rivers, lat. 25°. Probably does not extend much further west than long. 24°.	Seems not to have been found very far from its present limits.
12 a. <i>C. leechi</i>	To the west this species does not apparently advance beyond 26° 30' lat.; probable southern limit long. 21°.	In the same localities as at present.
13. <i>Strepsiceros kudu</i> .	Found in the Zulu country, not west of long. 30°, until we get between lat. 26° and 25°.	Common everywhere. A few in Cape colony in the Zuurberg in 1849.

* In all cases when boundaries are mentioned, Petermann's map of South Africa is referred to.

NAME.	PRESENT DISTRIBUTION.	PAST DISTRIBUTION.
14. <i>Oreas canna</i>	A few preserved in Natal. Still found in Zulu Land, but not west of long. 30° until one comes to lat. 24°, or at least but rarely. On the west coast in Damara Land rarely seen so far south as 20°, according to Andersson, 1857.	Common through S. Africa.
15. <i>Tragelaphus angasi</i> .	Inhabits the coast-line from the Inyalazi river in Zulu Land, as far north at least as Delagoa Bay.	Probably the same as at present.
16. <i>Alcelaphus caama</i> .	In parts of Natal; a few seen in long. 27°, lat. 25°; still a few found in the Zulu country. Its spoor seen in long. 27°, lat. 23°, but apparently getting very rare.	Common everywhere.
17. <i>A. lunatus</i>	In the Amaswazi Land, in lat. 27°; common on the Limpopo; beginning in lat. 25°, goes as far west as long. 25°.	First found about Latakoo in lat. 27°, long. 25°, by Dr. Burchell.
18. <i>A. albifrons</i>	Western boundary 28° long., eastern the Drakensberg range; an occasional one in winter found in the north of Natal. Probable boundary of its northern range lat. 35° 30'. Principal habitat the open country in the Orange Free State and the south of the Transvaal.	Found sparingly in the colony. In other respects its boundaries were the same as at present.
18 a. <i>A. pygargus</i> ...	In the Cape colony, in Breida's Farm at Cape L'Agulhaz, apparently the only place in which it is now found.	According to Harris, its limit north appears to have been 25° lat.; but its principal habitat was, according to the same author, the extensive grassy plains south of the Vaal river.
19. <i>Catoblepis gnu</i> ...	Not known apparently west of the Drakensberg range of hills; occurs yet through most parts of the Transvaal and Orange Free State in the open country; found again in lat. 22°, from about long. 26°, into Damara Land.	In much the same situations as now, but came much further north.
20. <i>C. gorgon</i>	Still found in the Zulu country. Does not begin to extend its range west until about lat. 25°.	Apparently never crossed the Vaal river into the colony, but common in all suitable localities to the north of it.
21. <i>Hippotragus equinus</i> .	Still found in the Amaswazi Land in lat. 27°; its probable range, besides, is most likely the same as that of the Sable Antelope.	According to Dr. Smith, once found in the old colony; but how far north is not known for certain. Gordon Cumming met with it just to the north of the Vaal river.
22. <i>H. niger</i>	Still said to linger on the Magaliesberg, where they were first found by Harris in 1836 or 1837. It probably does not extend further westward than long. 23°, lat. 21°, or further south than lat. 26°, and there only sparingly.	The same as at present.
23. <i>Oryx capensis</i>	A few still preserved at Cape L'Agulhaz, in Cape colony, on Breda's Farm. At present its furthest range east seems to be long. 27° nearly, yet found as far north as lat. 24°.	Found commonly in the Cape colony, but probably never further east than its present limit, being more of a western animal; or probably that part of the country was more suited to its habits.
24. <i>Bubalus caffer</i> ...	About lat. 28° in Zulu Land; a few still preserved in Natal, in those places not extending beyond 30° E. long. Begin to extend their range west about the Tropic of Capricorn.	Common through all S. Africa.
25. <i>Camelopardalis giraffa</i>	On the east coast about lat. 25°, which is the probable latitude through S. Africa	About lat. 28°, to the west of long. 24°. The Giraffe probably never crossed the Orange River to the south.

In this Table, when latitude and longitude are mentioned, south latitude and east longitude are to be understood. When a species is stated to be common everywhere, suitable localities must be understood.

I have endeavoured to make this Table as accurate as possible; but there is little very recent information of the south-west parts, Baines's 'Explorations' in 1862 being the latest.

There is also no information to be got of the great Kalahari Desert, whither I believe many animals go during the rainy season, and where they are comparatively safe from pursuit, except from the Bushmen.

I have taken lat. 18° as my northern limit of S. Africa.

The following list of the specimens which I sent home, and which are now in the Museum of Zoology and Comparative Anatomy of the University of Cambridge, has been drawn up by J. W. Clark, M.A., F.Z.S., Superintendent of the Museum.

CAPE BUFFALO (*Bubalus caffer*), ♂, skeleton.

WATER-BUCK (*Cobus ellipsiprymnus*), ♂, skeleton. An unusually fine skeleton, with skin, of a completely adult animal.

ROAN ANTELOPE (*Hippotragus equinus*), ♂, skeleton, with skin.

IMPALLA (*Æpyceros melampus*), ♂, skeleton. The skeleton is of a very old animal. With it were sent a skin, also of a male, and a skin of a female.

BRINDLED GNU OR
BLUE WILDEBEEST } (*Catoblepas gorgon*), ♂, skeleton, adult.

SASSABYE OR
BASTARD HARTEBEEST } (*Alcelaphus lunatus*), ♂, skeleton.

KOODOO (*Strepsiceros kudu*), ♂, skeleton.

ELAND (*Oreas canna*), ♂, skeleton.

INYALA (*Tragelaphus angasii*), ♀, skin.

BURCHELL'S ZEBRA (*Equus burchellii*), skeleton, with skin.

LION (*Felis leo*), ♀, skeleton.

SPOTTED HYÆNA (*Hyæna crocuta*), ♂, skeleton.

SILVER JACKAL (*Canis mesomelas*), 2 skeletons, with skins.

BUSH-BABY (*Galago maholi*), skeleton.